WHAT IS CLAIMED IS:

1. A method of screening for a carrier-type transport protein and/or a ligand thereto, comprising:

(a) providing a library comprising different complexes, each complex comprising a compound and a reporter, the compound varying between different complexes;

(b) providing a population of cells, one or more of which expresses one or more carrier-type transport proteins;

(c) contacting the population of cells with a plurality of complexes from the library; and

(d) detecting a signal from the reporter of a complex that is bound to a cell or internalized within a cell, the signal providing an indication that a complex whose reporter generated the signal comprises a compound that is a ligand for a carrier-type transport protein.

2. The method of claim 1, wherein the reporter preferentially generates the signal once the reporter is internalized within the cell, the signal thus providing an indication that a complex whose reporter generated the signal comprises a compound that is a potential substrate for a carrier-type transport protein.

3. The method of claim 2, wherein the reporter contains a cleavable site and the reporter is cleaved at the cleavable site after the complex is internalized within the cell.

4. The method of claim 2, wherein reporter comprises an agent that causes a morphological change upon internalization within a cell, and if a compound complexed with the reporter is a substrate for the carrier-type protein, the complex is transported by the carrier-type protein into a cell expressing the carrier-type protein, whereby the agent triggers a detectable morphological change in the cell.

5. The method of claim 3, wherein the agent inhibits cytoskeleton formation.

6. The method of claim 2, wherein the reporter comprises a fluorophore and a quencher moiety, and if a compound complexed with the reporter is a substrate for the carrier-type transporter protein, the complex is transported by the carrier-type transport protein into a cell expressing the carrier-type transporter protein, whereby the quencher moiety becomes separated from the fluorophore such that a fluorescent signal is emitted by the fluorophore within the cell, and the detection step comprises detecting the fluorescent signal.

7. The method of claim 6, wherein the reporter further comprises a cleavable linker that links the fluorophore and quencher moiety, the cleavable linker being cleaved after entry of the reporter into the cell.

8. The method of claim 6, wherein the fluorophore and quencher moiety are joined via a linker that contains a site cleavable by an enzyme, and the population of cells express the enzyme.

9. The method of claim 8, wherein the enzyme is an endogenous enzyme.

10. The method of claim 8, wherein the enzyme is expressed from an exogenous sequence harbored by the population of cells.

11. The method of claim 8, wherein the enzyme is a hydrolase.

12. The method of claim 2, wherein the reporter comprises a detection moiety disposed to interact with an intracellular agent, the cells have the intracellular agent, and if a compound complexed with the reporter is a substrate for the carrier-type protein, the complex is transported by the carrier-type transport protein into a cell expressing the carrier-type transport protein, whereby the detection moiety interacts with the intracellular agent to generate a detectable signal, and the detection step comprises detecting the detectable signal.

13. The method of claim 12, wherein the detection moiety is a nucleic-acid binding dye and the intracellular agent is a nucleic acid.

14. The method of claim 2, wherein the reporter comprises a substrate for an enzyme, and if a compound complexed with the reporter is a substrate for the carrier-type protein, the complex is transported by the carrier-type transport protein into a cell expressing

the carrier-type protein and the enzyme, whereby the enzyme metabolizes the enzyme substrate to form a detectable product, and the detecting step comprises detecting the detectable product.

15. The method of claim 14, wherein the enzyme is selected from the group consisting of luciferase, alkaline phosphatase, β-galactosidase, and β -glucouronidase.

16. The method of claim 15, wherein the reporter comprises luciferin, and wherein the population of cells express luciferase, and the luciferase metabolizes the luciferin to generate the detectable product.

17. The method of claim 16, wherein the luciferin is derivatized to bear a polar moiety to reduce passive uptake of complex.

18. The method of claim 17, wherein luciferin is joined to the complex via a cleavable site and an intracellular enzyme cleaves luciferin from the complex before luciferin can be metabolized by luciferase.

19. The method of claim 2, wherein the contacting step results in at least one complex being internalized within a cell through the activity of the carrier-type transport protein, the reporter promotes aggregation of subunits of a multimeric enzyme expressed within the population of cells, and the enzyme catalyzes production of a product that generates a detectable signal, the detecting step comprising detecting the detectable signal.

20. The method of claim 2, wherein the contacting step results in at least one complex being internalized in a cell through the activity of the carrier-type transport protein, the reporter promotes transcription from a promoter within a cell resulting in expression of an expression product that generates a detectable signal, and the detecting step comprises detecting the detectable signal.

21. The method of claim 20, wherein the expression product is an enzyme that catalyzes the production of the detectable signal.

22. The method of claim 2, wherein the contacting step results in at least one complex being internalized in at least one cell through the activity of the carrier-type transport protein, the reporter confers a selective advantage within the cell(s), and the

detecting step comprises propagating the population of cells under conditions that enrich for cell(s) on which the selective advantage has been conferred.

23. The method of claim 1, wherein the contacting step results in at least one complex being internalized in a cell through the activity of the carrier-type transport protein, and the method further comprises washing cells to remove unincorporated complexes before the detecting step, whereby signal from reporter internalized within the cell is preferentially detected.

24. The method of claim 1, wherein the contacting step results in at least one complex being internalized in a cell through the activity of the carrier-type transport protein, the reporter is a fluorescent molecule, and the method further comprises contacting cells with a fluorescence quencher incapable of entering the cells to quench fluorescence of unincorporated complexes before the detecting step, whereby signal from reporter internalized within the cell is preferentially detected.

25. The method of claim 1, wherein

(a) the population of cells comprise different cells that are located in a single reaction vessel;

(b) contacting results in at least one complex being bound to or internalized within one of the cells; and

(c) detecting comprises detecting the signal from the at least one complex.

26. The method of claim 25, wherein

(a) the different cells comprise test cells and counterpart control cells, the test cells expressing one of the one or more carrier-type transport proteins while the control cells fail to express the transport protein expressed by the test cells;

(b) the at least one complex is bound to or internalized within one of the test cells; and

(c) detecting further comprises detecting signal, if any, from the control cells.

27. The method of claim, 25, further comprising:

(e) separately contacting the different cells with each of the plurality of complexes; and

(f) determining the identity of the cell(s) to which the at least one complex is bound or internalized within.

28. The method of claim 25, wherein different cells have different distinguishable characteristics, and the method further comprises:

(e) determining the identity of the cell to which the at least one complex is bound or internalized within from its distinguishable characteristic.

29. The method of claim 28, wherein the distinguishable characteristics are different cellular morphologies.

30. The method of claim 28, wherein the distinguishable characteristics are different stains on the cells.

31. The method of claim 28, wherein the distinguishable characteristics are different markers located at the surface of the cells.

32. The method of claim 31, wherein the different markers are different epitopes, the different epitopes being differentially stained with antibodies specific for the different epitopes, antibodies for different epitopes bearing different labels.

33. The method of claim 32, wherein one or more of the different epitopes is expressed from an endogenous nucleic acid sequence.

34. The method of claim, 32, wherein one or more of the different epitopes is expressed from an exogenous nucleic acid sequence.

35. The method of claim 1, wherein

(a) the population of cells are contained in a single reaction vessel; and

(b) contacting comprises contacting the cells within the reaction vessel with a plurality of different complexes, different complexes comprising different compounds, whereby at least one complex is bound to or internalized within the cells; and

(c) detecting comprises detecting signal from the at least one complex.

36. The method of claim 35 further comprising:

(d) separately contacting the population of cells within different reaction vessels with the different complexes such that cells within the same reaction vessel receive the same complex while cells in at least some of the different reaction vessels receive different complexes; and

(e) determining the identity of the at least one complex.

37. The method of claim 35, wherein

(a) the reporter varies between different complexes and different reporters are disposed to generate different signals; and

(b) detecting comprises detecting the signal from the reporter of the at least one complex, the signal from the at least one complex providing an indication of the identity of the compound of the at least one complex.

38. The method of claim 37, wherein different reporters comprise different labels, the different labels selected from the group consisting of a radiolabel, a mass label, a spin label, a fluorophore, a chromophore and a luminescent moiety.

39. The method of claim 37, wherein different reporters comprise substrates for different enzymes expressed within the one or more cells.

40. The method of claim 37, wherein the population of cells is a plurality of different cells, different cells having different distinguishable characteristics, and further comprising determining the identity of the cell to which the at least one complex is bound or internalized from its distinguishing characteristic.

41. The method of claim 1, wherein detecting comprises detecting a signal from a reporter internalized within the one or more cells to identify at least one complex that

is internalized within the one or more cells, the compound complexed to the internalized complex being a substrate potentially able to transport an agent into cells expressing a carrier-type transport protein, the method further comprising:

(e) providing a modified complex, the modified complex comprising the compound identified in the detecting step (d) and an agent;

(f) contacting one or more cells with the modified complex; and

(g) determining whether the modified complex is internalized within one of the one or more cells by detecting the modified complex within the one or more cells, such detection providing an indication that the compound can serve as a substrate for transporting agents into cells expressing carrier-type transport proteins.

42. The method of claim 41, wherein the agent is a pharmaceutical agent.

SUB a2

43. The method of claim 42, wherein the reporter is attached to the complex of the at least one complex at an attachment site and the pharmaceutical agent replaces the reporter in the modified complex such that the pharmaceutical agent is attached to the attachment site in the modified complex.

44. The method of claim 43, wherein the providing step comprises synthesizing the modified complex.

45. The method of claim 43, wherein the modified complex further comprises a reporter attached at a site other than the attachment site.

46. The method of claim 1, wherein contacting results in at least one complex being internalized in a cell, detecting comprises detecting signal from the reporter of the at least one complex and the method further comprises

(e) determining the identity of the compound in the at least one complex detected in step (d);

(f) providing a focused library, the focused library comprising a plurality of complexes, each complex in the focused library comprising a compound that is a variant of the compound identified in step (e);

(g) contacting one or more cells with one or more of the complexes of the focused library, the one or more cells expressing a carrier-type transport protein; and

(h) detecting a signal from a reporter of a complex internalized within one of the one or more cells, the signal providing an indication that the compound of the internalized complex is a substrate for a carrier-type transport protein.

47. The method of claim 1, wherein the population of cells has been transformed with a DNA library encoding the one or more transport proteins.

48. The method of claim 47, further comprising:

(e) isolating a cell that has bound the reporter or internalized the reporter; and

(f) isolating a DNA molecule encoding a carrier-type transport protein from the isolated cell to identify the carrier-type transport protein that exhibits activity with the compound of the complex that is bound to or internalized within the isolated cell.

49. The method of claim 1, wherein the carrier-type transport protein is selected from the group of an amino acid transporter, a dipeptide transporter, an oligopeptide transporter, a simple sugar transporter, a bile acid transporter, a vitamin transporter, a phosphate transporter, a monocarboxylic acid transporter, an organic anion transporter, an organic cation transporter, fatty acid transporter, a nucleoside transporter, and a ABC transporter.

50. The method of claim 49, wherein the transport protein is selected from the group consisting of PEPT1, sodium-dependent glucose transport protein (SGLT1), liver bile acid transporter (NTCP) and ileal bile acid transporter (ASBT).

51. The method of claim 1, wherein the one or more carrier-type proteins are endogenous proteins.

52. The method of claim 1, wherein the one or more carrier-type proteins are expressed from an exogenous sequence harbored by the population of cells.

SUB a3 53. The method of claim 52, wherein the cells of the population of cells is selected from the group consisting of Chinese hamster ovary (CHO) cells, VERO cells,

HeLA cells, COS-7 cells, MDCK cells, HEK cells, CaCo-2 cells, HCT-8 cells, T84 cells and HT29 cells.

54. The method of claim 53, wherein the cells are treated to yield membrane preparations or vesicles and the complexes are contacted with the membrane preparations or vesicles.

55. The method of claim 1, wherein the test compound is directly joined to the reporter via a chemical bond.

56. The method of claim 1, wherein the complex further comprises a linker joining the test compound and the reporter.

57. The method of claim 1, wherein the linker contains a cleavage site.

58. The method of claim 1, wherein the linker is a stable linker lacking a cleavage site.

59. The method of claim 1, wherein the reporter is selected from the group consisting of a fluorophore, a chromophore, a radioisotope, a magnetic particle, a mass label and a spin label.

60. The method of claim 59, wherein the reporter is a fluorophore.

61. The method of claim 1, wherein the detection step is performed by brightfield, phase contrast or fluorescence microscopy.

62. The method of claim 1, wherein the detection step is performed using a confocal microscope.

63. The method of claim 62, wherein the confocal microscope has multiple wavelength detection capability.

64. The method of claim 1, wherein the different compounds are compounds from a combinatorial library.

65. The method of claim 1, wherein the different compounds are variants of a known substrate for a carrier-type transport protein.

66. The method of claim 1, wherein the different compounds are small molecules.

67. The method of claim 1, wherein the plurality of different compounds are peptides.

68. The method of claim 1, wherein the population of cells of step (b) comprise a test population and the method further comprises

(e) providing a population of control cells the same as the population of test cells of step (b), except that the control cells fail to express the one or more carrier-mediated transport proteins; and

(f) repeating steps (c) and (d) with the control cells, wherein a statistically significant difference in the signal from the reporter in the population of test cells relative to the signal from the control cells provides a further indication that the complex whose reporter generated the signal comprises a compound that is a ligand for a carrier-type transport protein.

69. A method of screening for a carrier-type transport protein and/or a substrate thereto, comprising:

(a) providing one or more cells, each cell expressing a carrier-type transport protein;

(b) contacting the one or more cells with one or more complexes, each complex comprising a compound and a reporter; and

(c) selectively detecting a signal from a reporter internalized within one or more of the cells as compared to signal from reporter outside the cell to indicate that a complex whose reporter generated the signal comprises a compound that is a substrate for a carrier-type transport protein.

70. The method of claim 69, wherein the reporter comprises a fluorophore and a quencher moiety, and if a compound complexed with the reporter is a substrate for the carrier-type transporter protein, the complex is transported by the carrier-type transport protein into a cell expressing the carrier-type transporter protein, whereby the quencher moiety becomes separated from the fluorophore such that a fluorescent signal is emitted by

the fluorophore within the cell, and the detection step comprises detecting the fluorescent signal.

71. The method of claim 69, wherein the contacting step results in at least one complex being internalized in a cell, the reporter is a fluorophore that fluoresces upon binding to a nucleic acid within the cell, which fluorescence is detected in the detecting step.

72. The method of claim 69, wherein the reporter comprises a substrate for an enzyme, and if a compound complexed with the reporter is a substrate for the carrier-type protein, the complex is transported by the carrier-type transport protein into a cell expressing the carrier-type protein and the enzyme, whereby the enzyme metabolizes the substrate to form a detectable product, and the detecting step comprises detecting the detectable product.

73. The method of claim 69, wherein the contacting step results in at least one complex being internalized in a cell, the reporter promotes aggregation of subunits of a multimeric enzyme expressed within the population of cells, and the enzyme catalyzes production of a product that generates a detectable signal, and detecting comprises detecting the detectable signal.

74. The method of claim 69, wherein the contacting step results in at least one complex being internalized in a cell, the reporter promotes transcription of a promoter within a cell resulting in expression of an enzyme that catalyzes production of a product that generates a detectable signal, and detecting comprises detecting the detectable signal.

75. A method of screening for a carrier-type transport protein and/or a ligand thereto, comprising:

(a) providing a plurality of different cells that are located within a single reaction vessel, each cell expressing a carrier-type transport protein, and different cells having different distinguishable characteristics;

(b) contacting the plurality of different cells with one or more complexes, each complex comprising a compound and a reporter, whereby at least one complex is bound to or internalized within one of the cells;

(c) detecting a signal from the reporter of the at least one complex bound to or internalized within the cell in step (b); and

(d) determining the identity of the cell in step (b) from its distinguishable characteristic.

76. A method of screening for a carrier-type transport protein and/or a ligand thereto, comprising:

(a) providing one or more cells, each cell expressing a carrier-type transport protein, and located in a single reaction vessel;

(b) contacting the one or more cells with a plurality of different complexes, each complex comprising a compound and a reporter, the compound and reporter varying between different complexes and different reporters disposed to generate different signals, whereby at least one complex is bound to or internalized within the one or more cells; and

(c) detecting the signal from the reporter of the at least one complex, the signal providing an indication of the identity of the compound borne by the at least one complex.

77. A method of screening for a carrier-type transport protein and/or a substrate thereto, comprising:

(a) providing one or more cells, each cell expressing a carrier-type transport protein;

(b) contacting the one or more cells with one or more complexes, each complex comprising a compound and a reporter;

(c) detecting a signal from a reporter internalized within the one or more cells to identify at least one complex that is internalized within the one or more cells, the compound of the internalized complex being a substrate potentially disposed to transport a pharmaceutical agent into a cell via the activity of a carrier-type transport protein;

(d) preparing a modified complex, the modified complex comprising the compound identified in step (c) and a pharmaceutical agent;

(e) repeating steps (a) and (b) with the modified complex; and

(f) determining whether the modified complex is internalized within one of the one or more cells by detecting the modified complex within the one or more cells, such detection providing an indication that the compound of the modified complex can serve as a substrate for transporting a pharmaceutical agent into cells expressing carrier-type transport proteins.

78. A method of screening for a receptor-type transport protein and/or a ligand thereto, comprising:

(a) providing a library comprising different complexes, each complex comprising a compound and a reporter, the compound varying between different complexes;

(b) providing a population of cells, one or more of which expresses one or more receptor-type transport proteins;

(c) contacting the population of cells with a plurality of complexes from the library; and

(d) detecting a signal from the reporter of a complex that is bound to a cell, internalized within a cell or has been transported through a cell, the signal providing an indication that a complex whose reporter generated the signal comprises a compound that is a ligand for a receptor-type transport protein.

79. The method of claim 78, wherein the reporter comprises a fluorophore and a quencher moiety, and if a compound complexed with the reporter is a substrate for the receptor-type transporter protein, the complex is transported by the receptor-type transport protein into a cell expressing the receptor-type transporter protein, whereby the quencher moiety becomes separated from the fluorophore such that a fluorescent signal is emitted by the fluorophore within the cell, and the detection step comprises detecting the fluorescent signal.

80. The method of claim 78, wherein the contacting step results in at least one complex being internalized within a cell through the activity of the receptor-type transport protein, the reporter comprises a nucleic-acid binding dye, and whereby the dye interacts with a nucleic acid within one of the cells to generate a detectable signal, and the detection step comprises detecting the detectable signal.

81. The method of claim 78, wherein the detection moiety is a nucleic-acid binding dye and the intracellular agent is a nucleic acid.

82. The method of claim 78, wherein the contacting step results in at least one complex being internalized within a cell through the activity of the receptor-type transport protein, the reporter comprises a substrate for an enzyme, the population of cells express the enzyme, and whereby the enzyme metabolizes the substrate to form a detectable product, and the detecting step comprises detecting the detectable product.

83. The method of claim 78, wherein the contacting step results in at least one complex being internalized within a cell through the activity of the receptor-type transport protein, the reporter promotes aggregation of subunits of a multimeric enzyme expressed within the population of cells, and the enzyme catalyzes production of a product that generates an optical signal, the detecting step comprising detecting the optical signal.

84. The method of claim 78, wherein the contacting step results in at lest one complex being internalized in a cell through the activity of the receptor-type transport protein, the reporter promotes transcription from a promoter within a cell resulting in expression of an enzyme that generates an optical signal, and the detecting step comprises detecting the optical signal.

85. The method of claim 78, wherein the contacting step results in at least one complex being internalized in at least one cell through the activity of the receptor-type transport protein, the reporter confers a selective advantage within the cell(s), and the detecting step comprises propagating the population of cells under conditions that enrich for cell(s) on which the selective advantage has been conferred.

86. The method of claim 78, wherein

(a) the population of cells comprise different cells, the different cells expressing different receptor-type transport proteins, having different distinguishable characteristics and being located in a single reaction vessel;

(b) contacting results in at least one complex being bound to, internalized within, or transported through one of the cells;

(c) detecting comprises detecting the signal from the reporter of the at least one complex; and

(d) the method further comprises determining the identity of the cell to which the at least one complex is bound, internalized within or transported through from its distinguishable characteristic.

87. The method of claim 78, wherein

(a) the population of cells are contained in a single reaction vessel;

(b) contacting comprises contacting the cell(s) within the reaction vessel with a plurality of different complexes, the reporter varying between different complexes and different reporters being disposed to generate different signals, whereby at least one complex is bound to, internalized within, or transported through the cells;

(c) detecting comprises detecting the signal from the reporter of the at least one complex; and

(d) the method further comprises determining the identity of the cell to which the at least one complex is bound, internalized within or transported through from its distinguishable characteristic.

88. The method of claim 87, wherein the population of cells is a plurality of different cells, different cells having different distinguishable characteristics, and further comprising determining the identity of the cell to which the at least one complex is bound or internalized from its distinguishing characteristic.

89. The method of claim 78, wherein each complex further comprises a support, the compound and reporter being linked to the support.

90. The method of claim 89, wherein the supports are nanoparticles.

91. The method of claim 89, wherein the supports are molecular scaffolds.

92. The method of claim 89, wherein each complex further comprises a tag encoding at least one step in synthesis of the compound of the complex.

93. The method of claim 92, further comprising characterizing the compound by decoding the tag.

94. The method of claim 93, wherein decoding the tag defines the complete structure of the compound.

95. The method of claim 78, wherein the one or more transport proteins include a human intestinal epithelium transport protein.

96. The method of claim 78, wherein the population of cells has been transformed with a DNA library encoding the one or more transport proteins.

97. The method of claim 96, wherein the DNA library is a cDNA library from human intestinal epithelial cells.

98. The method of claim 78, wherein the population of cells are polarized cells arranged in a monolayer.

99. The method of claim 78, wherein the reporter generates an optical signal and the detecting method comprises confocal imaging of the position of reporter relative to the cells in the monolayer.

100. The method of claim 99, wherein the confocal imaging is performed at intervals to monitor internalization of a complex into a cell, the cell internalizing the complex is isolated, and a support bearing a compound is isolated from the isolated cell.

101. The method of claim 98, wherein the polarized cells are layered above a membrane that is impermeable to the complexes.

102. The method of claim 99, wherein the confocal microscopy is performed from below the membrane and detects transport of a complex through the cell to the membrane.

103. The method of claim 102, wherein the reporter is a substrate for an enzyme, the membrane is impregnated with the enzyme, and after transport of a complex through a cell, the enzyme metabolizes the reporter of the complex to generate a product generating an optical signal.

104. The method of claim 102, wherein a second membrane is between the polarized cells and the membrane, the second membrane being permeable to the complexes.

105. The method of claim 104, wherein the reporter is disposed to induce a metabolic event generating an optical signal in indicator cells, and the second membrane is impregnated with the indicator cells, whereby at least one complex is transported through the monolayer of cells, induces a metabolic event generating an optical signal in the indicator cells, and passes through the second membrane to the first membrane; the detecting step comprises detecting the optical signal, and a support bearing a compound is isolated from the membrane by virtue of its proximity to the optical signal in the second membrane.

106. The method of claim 78, wherein the complexes used in the contacting step are produced by:

(a) introducing into a body compartment or tissue of an animal a starting population of complexes, each complex comprising a support, a test compound, and a reporter, the test compound varying between complexes, and the reporter being the same for different complexes; and

(b) recovering complexes by means of their reporter from a tissue or fluid of the animal after transport of at least some of the complexes through cells lining the body compartment, the recovered complexes providing the population of complexes for contacting with the cell population.

107. A method of screening for a substrate of a transport protein, comprising:

(a) introducing into a body compartment of an animal a population of complexes, each complex comprising a support, a test compound, and a reporter, the test compound varying between complexes; and

(b) recovering complexes by means of their reporter from a tissue or fluid of the animal after transport of at least some of the complexes through cells lining the body compartment.

108. The method of claim 107, further comprising repeating the method with recovered complexes from step (b) of one cycle forming the population of complexes to be introduced into the body compartment of the animal in the next cycle.

109. The method of claim 108, wherein a different animal is used in each cycle of the method.

110. The method of claim 107, wherein the body compartment is the lumen of the gastrointestinal tract.

111. The method of claim 107, wherein the tissue or fluid is the blood or lymphatic fluid of the animal.

112. The method of claim 107, further comprising sealing the body compartment around the introduced population of complexes to increase the available time for transport of complexes through cells lining the compartment.

113. The method of claim 107, wherein the reporter is a capture tag, and the recovering step is by affinity enrichment for the capture tag using a capture tag receptor.

114. The method of claim 107, wherein the reporter is an optically detectable label and the recovering step comprises recovering the complexes using FACS sorting.

115. The method of claim 107, wherein the reporter is a magnetic substance, and the recovering step comprises exposing the tissue or fluid to a magnet to isolate the complexes.

116. The method of claim 107, wherein each complex further comprises an encoding tag encoding at least one synthesis step in the synthesis of the compound of the complex, and the method further comprises decoding the encoding tag(s) of recovered complex(es).

117. The method of claim 107, further comprising classifying compounds of the recovered complexes by similarity in chemical structure.

118. The method of claim 117, further comprising ranking groups by number of members, the ranking providing an indication of the efficacy of compounds in a group as substrates of a transport protein in the cells lining the body compartment.

119. The method of claim 107, further comprising

(c) contacting recovered complexes with a population of polarized cells transformed with a DNA library at least some members of which encode potential transport proteins, the cells being arranged as a monolayer on a membrane and the complexes contacting the apical side of the cells;

(d) detecting complexes transported through the polarized cells to the membrane by virtue of the reporter of the complexes;

(e) recovering polarized cells in proximity to the transported complexes; and

(f) clonally expanding the recovered polarized cells.

120. The method of claim 119, further comprising

(g) forming a monolayer of cells on a membrane for each of a plurality of clonally expanded recovered polarized cells;

(h) contacting each monolayer with another sample of recovered complexes from the animal; and

(i) recovering further recovered complexes that have been transported through the monolayers of cells, the complexes passing through a monolayer having complexes that are substrates for a receptor-type transport protein expressed by the cells in the monolayer.

121. The method of claim 119, further comprising

(g) recovering complexes contacted with one of the monolayers that are not transported through the monolayer, and contacting the recovered complexes with a second monolayer.

122. The method of claim 107, wherein the introducing step comprises introducing a plurality of populations of complexes into the body compartment of the animal, the different populations having different reporters, and the recovering step comprises recovering a plurality of subpopulations of complexes, the different subpopulations having the different reporters.

123. The method of claim 122, wherein each subpopulation is recovered by affinity chromatography using a different receptor for each different reporter.

124. The method of claim 122, further comprising ranking the recovered subpopulations by number of members.

125. The method of claim 122, wherein the different reporters give different optically detectable signals.

126. The method of claim 125, wherein the different reporters are fluorescent molecules emitting at different wavelengths.

127. A pharmaceutical composition comprising a nanoparticle, a drug within or linked to the nanoparticle and a ligand linked to or within the nanoparticle, the ligand being effective to promote cellular uptake and/or transport of the particle by receptor-type transport proteins.

128. The pharmaceutical composition of claim 127, wherein the ligand is substrate for a receptor-type transport receptor.

129. The pharmaceutical composition of claim 127, further comprising a second ligand linked to or within the nanoparticle.

130. The pharmaceutical composition of claim 129, wherein the ligand binds to a first cellular receptor, and the second ligand binds to a transport protein, which binding results in internalization of the nanoparticle.

131. The pharmaceutical composition of claim 130, wherein the second ligand is contained within the nanoparticle and is released on binding of the first ligand to the cellular receptor.

132. The pharmaceutical composition of claim 129, wherein the ligand binds to a receptor-type transport protein, which binding results in internalization of the nanoparticle, and the second ligand binds to a second transport protein within a cell that effects basolateral trafficking of the internalized nanoparticle to the basolateral exterior of the cell.

133. The pharmaceutical composition of claim 127, further comprising an agent linked to or within the particle.

134. The pharmaceutical composition of claim 133, wherein the agent is a buffering agent.

135. The pharmaceutical composition of claim 133, wherein the agent is an antacid.

136. The pharmaceutical composition of claim 133, wherein the agent is a lysing agent.

137. The pharmaceutical composition of claim 127, further comprising a compound that after internalization of the nanoparticle into a cell targets the nanoparticle to a target organelle.